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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,175	11/26/2003	Truman F. Kellie	456.03.156US1	5758

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EXAMINER	
WORKU, NEGUSSIE	
ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,175	KELLIE ET AL.	
	Examiner	Art Unit	
	Negussie Worku	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See attachment*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to application filed on 11/26/03. Claims 1-20 are pending in the application. Claims 1 and 15 are independent and claims 2-14 and 16-20 are dependent,

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 01/03/07 and 03/29/04 has been reviewed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10/1/07

4. The claimed invention lacks patentable utility. Regarding to claim 17-20, having a process completed program step, but lacks utility, wherein "the processor contain a program" should be replaced by ""a computer-readable medium encoded with computer-executable instructions."

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi (USP 5841520), in view of Loopstra et al. (USP 5,969,441).

With regard to claim 1, Taniguchi teaches a method (as shown in fig 1) for measuring linear spot velocity or position variations in a scanning system (as shown in fig 1 and 7), comprising: providing at least two radiation detectors that can move in tandem across a scan line, the two radiation detectors being spaced apart by a distance (interferometer 7 of fig 1, for measuring the position of the reticle stage in the scanning direction, reticle stage RST is arranged over the projection optical system, which is moveable in the scanning direction, col.22, lines 35-50); positioning the at least two radiation detectors (interferometer 7 of fig 1, and stage controller for monitoring, scan mark) at a first point on the scan line (see description of fig 7, col.38, lines 50-55); scanning the at least two radiation detectors with scanning radiation and recording the position of the two detectors along the scan line and the time taken for the scanning radiation to scan from a first of the at least two radiation detectors to a second of the at least two radiation detectors while the at least two radiation detectors are positioned at

the first point (photoelectric sensor 55 of fig 7, has sufficient areal size to receive all light beam for scanning the mark, col.38, lines 57-68); moving the at least two radiation detectors to a second point on the scan line maintaining the distance d between the at least two radiation detectors(col.38, lines 50-55); and again scanning the at least two radiation detectors with scanning radiation and recording the position of the two detectors along the scan line and the time taken for the scanning radiation to scan from a first of the at least two radiation detectors to a second of the at least two radiation detectors while the at least two radiation detectors are positioned at the second point(photoelectric sensor 55 of fig 7, has sufficient areal size to receive all light beam for scanning the mark, col.38, lines 57-68);

Taniguchi does not teach the two radiation detectors being spaced apart by a distance.

In the same area of lithographic device Loopstra (441), teaches the two radiation detectors being spaced apart by a distance (position measuring device 3 and 37, positioned in x direction, col.11, lines 15-25).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the imaging apparatus of Taniguchi to include: two radiation detectors being spaced apart by a distance.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified imaging device of Taniguchi by the teaching of Loopstra (441), for the purpose of obtaining a perfect final image, for all the prints of different color to be exactly superimpose.

With regard to claim 2, Taniguchi teaches a method (as shown in fig 1), the method wherein steps and are repeated across the scan line (pattern area 40 of fig 4, having a pattern involves 4 teats, col.33, lines 20-23).

With regard to claim 3, Taniguchi teaches a method (as shown in fig 1), wherein an electronic look-up table is provided identifying spot velocity error as a function of spot position along the scan line, (pattern area 40 of fig 4, having a pattern involves 4 tess, col.33, lines 20-23).

With regard to claim 4, Taniguchi teaches a method (as shown in fig 1), wherein an electronic look-up table is provided identifying spot velocity error as a function of spot position along the scan line (pattern area 40 of fig 4, having a pattern involves 4 tests, error function test col.33, lines 20-23).

With regard to claim 5, Taniguchi teaches a method (as shown in fig 1), wherein a trend line is determined for data to be put into an electronic look-up table to identify data errors from sources other than lens aberrations (col.34, lines42-48).

With regard to claim 6, Taniguchi teaches a method (as shown in fig 1) method wherein the trend line is used to correct data before the data is placed into the look-up table (40 o fig 4, col:34, lines 42-48).

With regard to claim 7, Taniguchi teaches a method (as shown in fig 1), the method wherein the at least two detectors comprise two split detectors that are moved while supported on a rigid platform (substrate 5 of fig 3).

With regard to claim 8, Taniguchi teaches a method (as shown in fig 1), the method of wherein the distance between the first point and the second point is approximately (fig 1, shows the starting point for scanning to measure the distance to the end point).

With regard to claim 9, Taniguchi teaches a method (as shown in fig 1), wherein recorded information is used to determine a perspective of spot placement error along the scan line for a particular lens used in the scanning system (lens 2 of fig 1, for space placement error correction).

With regard to claim 10, Taniguchi teaches a method (as shown in fig 1), the method wherein recorded information is used to determine a perspective of spot placement error along the scan line for a particular lens used in the scanning system (lens 2 of fig 1, for space placement error correction).

With regard to claim 11, Taniguchi teaches a method (as shown in fig 1), the method wherein recorded information for one lens is compared with recorded information for at least one other lens (lens 2 of fig 1, for space placement error correction).

With regard to claim 12, Taniguchi teaches a method (as shown in fig 1) the method wherein recorded information for one lens is compared with recorded information for at least one other lens (lens 2 of fig 1, for space placement error correction).

With regard to claim 13, Taniguchi teaches a method (as shown in fig 1), the wherein lenses that are compared are selected or rejected for combination into a multi-color tandem scanning imaging system based on similarity of optical performance (the transmittance for the illuminating plurality of light switched at a plurality levels, (color) in the color scanning system, col.50, lines 20-25).

With regard to claim 14, Taniguchi teaches a method (as shown in fig 1) the method wherein lenses (lens 2 of fig 1) that are compared are selected or rejected for combination into a multi-color tandem scanning imaging system (fig 1, which includes color imaging method) based on similarity of optical performance.

With regard to claim 15, Taniguchi teaches, an apparatus (as shown in fig 1) for

the measurement of linear pixel displacement error in a scanning system comprising: a scanning source that provides scan radiation along a scan line (interferometer 7 of fig 1, for measuring the position of the retics stage in the scanning direction, reticle stage RST is arranged over the projection optical system, which is moveable in the scanning direction, col.22, lines 35-50); and a processor that collects detection data from the at least two radiation detectors (photo sensor 55 of fig 7, for collecting, col.38, lines 50-55),

Taniguchi does not teach the two radiation detectors being spaced apart by a distance.

In the same area of lithographic device Loopstra (441), teaches the two radiation detectors being spaced apart by a distance (position measuring device 3 and 37, positioned in x direction, col.11, lines 15-25).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the imaging apparatus of Taniguchi to include: two radiation detectors being spaced apart by a distance.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified imaging device of Taniguchi by the teaching of Loopstra (441), for the purpose of obtaining a perfect final image, for all the prints of different color to be exactly superimpose.

With regard to claim 16, Taniguchi does not teach the two radiation detectors being spaced apart by a distance.

In the same area of lithographic device Loopstra (441), teaches the two radiation detectors being spaced apart by a distance (position measuring device 3 and 37, positioned in x direction; col.11, lines 15-25).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the imaging apparatus of Taniguchi to include: two radiation detectors being spaced apart by a distance.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified imaging device of Taniguchi by the teaching of Loopstra (441), for the purpose of obtaining a perfect final image, for all the prints of different color to be exactly superimpose.

With regard to claim 17, Taniguchi teaches a the apparatus method (as shown in fig 1), wherein the processor contains a program that can modify the detection data for spot positioning defects in the data that are contributed by effects other than lens aberration (it is inherent that the light have to go through lens before it reached on to image sensor).

With regard to claim 18, Taniguchi teaches the apparatus, (as shown in fig 1), wherein scan radiation is passed through a lens before it reaches a focal plane for the scan line (it is inherent that the light have to go through lens before it reached on to image sensor).

With regard to claim 19, Taniguchi teaches the apparatus (as shown in fig 1), wherein scan radiation is passed through a lens (2 of fig 1) before it reaches a focal plane for the scan line (it is inherent that the light have to go through lens before it reached on to image sensor).

With regard to claim 20, Taniguchi teaches, (as shown in fig 1), wherein scan radiation is passed through a lens (lens 2 of fig 7) before it reaches a focal plane for the scan line, (it is inherent that the light have to go through lens before it reached on to image sensor).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Negussie Worku whose telephone number is 571-272-7472. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on 571-272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NW
09/24/07

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SUPERVISORY PATENT EXAMINER
10/1/07